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GEOLOGICAL NEWS.—Mr. S. A. Miller, of Cincinnati, is publishing an important series of historical monographs of North American geology. He has concluded the Palæozoic and Mesozoic portions, and is preparing that of the Tertiaries.—Mr. M. E. Wadsworth, of Cambridge, has recently issued in the Bulletin of the Museum of Comparative Zoölogy, a series of full notes on the iron and copper districts of Lake Superior. He gives many graphic sections of vein contacts, explains the stratigraphy and reviews the literature.—Prof. Owen has recently described a new species of Theromorph reptile from the Permian bed of South Africa, under the name of *Platypodosaurus robustus*. The animal nearly resembles some of the Texan forms described by Cope in 1878.—Dr. J. W. Spencer, in the *Canadian Naturalist*, Vol. VIII, describes a number of new Graptolites from the Niagara formation. Four of them are referred to three new genera, *Calyptograpsus*, *Rhizograpsus* and *Acanthograpsus*.

GEOGRAPHY AND TRAVELS.¹

THE FRANKLIN SEARCH EXPEDITION.²—This expedition, under Lieut. Schwatka, has returned home after a remarkably successful journey to King William Land, and the results of their investigations into the circumstances attending the loss of the memorable British company commanded by Sir John Franklin have been given at length to the world through the columns of the *New York Herald*. Lieut. Schwatka wisely lost no time in looking up the cairn on the Melville peninsula, but set out early in the spring of 1879 on his sledge journey to the scene of the great disaster. Leaving Depot island, in Hudson's bay, on April 1st, they traversed a region previously unvisited by white men, proceeding in a nearly north-westerly direction by the shortest route, to the mouth of Back's river. The party was composed of four white men and thirteen Innuits, with sleds drawn by forty-two dogs. They took with them only about one month's rations, and the success of the expedition is doubtless largely owing to their ability to live on the supplies furnished by the country. Their route should have led them across the Wager river, but at N. lat. $65^{\circ} 45'$ where, according to the charts, they should have been on its banks, nothing could be seen of it. They soon, however, came to an important branch of Back's river, which they followed ninety miles, leaving it near its mouth. Its whole length is 110 to 120 miles. They named it Hayes river in honor of the President. From the tribe living on this stream they heard the same account of the sinking of one of the vessels of Franklin's expedition at a point near O'Reilly's island (N. lat. $63^{\circ} 30'$, W. long. 95°) in the spring of 1849 as was related to Capt. Hall. On May 31st, after visiting Montreal island, they met the

¹ Edited by ELLIS H. YARNALL, Philadelphia.

² See NATURALIST for August, 1878, p. 571, and November, 1879, p. 723.

first Neitchillik encampment. Near it on an inlet west of Point Richardson a boat, skeletons and many relics had been found by the natives.

This is believed to be the furthest point reached by the remnant of Franklin's company, and here Lieut. Schwatka also believes the records of the expedition were finally lost, having been contained in a tin box which was broken open by the Esquimaux and its contents scattered to the winds.

Lieut. Schwatka first reached King William Land at the mouth of Pfeffer river, where he visited the cairn erected by Capt. C. F. Hall in May, 1869. On June 15th, the party arrived at Cape Herschell, when they left most of their men in a permanent camp. Cape Herschell was found to be about eighteen or twenty miles further west than it is given on the charts of the Admiralty. Continuing their journey along the coast they discovered the graves of two white men before reaching Collinson's inlet, and at the inlet the camp of Capt. Crozier and his command after abandoning the vessels. They found many relics here and an opened grave, the remains in which were identified by a medal found with them as those of Lieut. John Irving, third officer of the *Terror*. It is probable that Lieut. Irving was conducting a small party back to the ship for provisions after the crews had reached the southern shore of King William Land, and that the men said by the Eskimos to have drifted with the ship to O'Reilly's island, belonged to this return party. Among the ruins of a cairn was found a copy of the record discovered by Lieut. Hobson, of McClintock's expedition in Sir Leopold McClintock's handwriting, and partially illegible. This was the only document found during the journey. McClintock's record buried near the cairn was searched for but not found.

Leaving Irving bay on June 30th, they reached Cape Felix on the 3d of July. No traces of the Franklin expedition were found until three miles south of the cape, where the remains of a permanent camp were seen. A well built cairn or pillar seven feet high on a high hill two miles back from the coast was examined without finding any records. Returning down the coast a careful examination of the country within five or six miles of the coast was made, and at Point Le Vesconte the grave of an officer was found; also in the neighborhood of Erebus bay several skeletons, and in a deep inlet the remains of a very large boat.

Cenotaphs were erected wherever human remains were found. The skeletons were always incomplete and it was not always possible to tell the number of individuals represented in the piles of bones found,

The ice broke up in Erebus bay about the 1st of August. Reaching Terror bay on August 3d, the search was continued along the coast as far west as Cape Crozier, only one skeleton

being found. Lieut. Schwatka remained in King William Land until November 1st, when he started on his return trip to Hudson's bay, pursuing a route south and west of his former course, and following Back's river to 66° N. lat. This stream is laid down on the maps about one degree further west than as found by the travelers. Finding game very scarce near the river, and losing many of their dogs for want of proper food,¹ the party left the river on December 30, 1879, and traveling in a south-easterly direction through a country where plenty of game was found, arrived at Depot island on March 4, 1880.

While in King William Land two of an apparently distinct species of snipe were shot and their skins preserved for deposit in the Smithsonian Institution collection. One of them was distinguished "by a sweet simple song, somewhat similar to a lark, its silvery tones gushing forth as if in perfect ecstasy of enjoyment of sunshine and air, at the same time rising and poising itself on its wings." Small flocks of ducks—the drakes and ducks in separate bands—were also seen. "The drakes are exceedingly pretty, especially about the head and neck. The head is of a pale olive-green hue, a fashionable color in silks a few years ago, and known by the extraordinary name of 'elephant's breath.' This gradually merges into a very pale, warm gray, the line of demarkation between it and the very dark brown which constitutes the general color of the body being very abrupt. The bill is of a vermilion red, and surmounted by a bright orange colored crest with a black border as positively marked as if of black tape." "We often came," says Mr. Gilder, "upon an immense body of drakes sitting upon the edge of an ice floe, looking very much like a regiment of huzzars at a distance drawn up in line of battle. The duck is not so gaudy as her husband. She is quite contented in a full suit of mottled brown and olive-gray, presenting a texture on the back somewhat similar to the canvas back species of Chesapeake bay." Immense herds of reindeer were seen in King William Land in September, but when, about October 1st, the ice became sufficiently strong for them to cross to the mainland, they rapidly disappeared.

It is now shown that the greatest distance traversed by the members of the Franklin expedition was not much over 250 miles. All along this route the Schwatka party found game and supplies in more or less abundance, yet the crews of the *Erebus* and *Terror* evidently died from starvation. As Dr. Hayes remarks, "it does seem strange that 105 men should in so comparatively short a march have been swept out of existence and left no trace by which the history of their expedition can be read."

¹ Twenty-seven died before reaching Depot island.

The temperatures for the following months are given by Mr. Gilder:

1879, September.....	mean	21.1°	minimum	5°
October.....	"	0°	"	—38°
November.....	"	—23.3°	"	—49°
December.....	"	—50.4°	"	—69°
1880, January.....	"	—53.2°	"	—71°
February.....	"	—44.8°	"	—69°
			maximum	—26°
				—23°

January was a very stormy month there being only eleven days on which travel was possible, and the total distance passed over in that period, ninety-one miles.

The total distance traveled was 3251 miles, being very much the longest sledge journey in unexplored regions of which we have record. They were also in the field during the entire winter, so that the journey, both in distance and time, is most remarkable. Their dependence upon the resources of the country, much aided, it should be noted, by the excellence of their fire-arms, is also a distinguishing feature of the exploration. To the fact that Lieut. Schwatka and his three companions were able to live on this food is it doubtless owing that they were able to bear with impunity and even with little suffering the great cold to which they were exposed. To their diet and also to their active life throughout the whole year we must attribute their exemption from scurvy, although deprived of lime juice or any of the anti-scorbutics usually taken by similar parties. Probably also his companions possessed, alike with Lieut. Schwatka, the robust health, cheerful disposition and powers of concentration ascribed to him by Mr. Gilder. Certainly the success of this effort to reach this remote land indicate also the existence of strict discipline and thorough organization, the want of which has so often proved fatal to the success of similar attempts at exploration in these desolate regions.

It should be remembered that the results of Lieut. Schwatka's investigations entirely corroborate the statements made by Capt. Hall concerning the fate of the Franklin expedition. And especially is this the case as regards the successful accomplishment of the north-west passage by either the *Erebus* or the *Terror*.

WE REGRET to record the failure of the Howgate expedition, the *Gulnare* having returned home from Disco, being found to be unseaworthy. Dr. Parry, the naturalist of the expedition, remained in Greenland for the winter.

COL. PREJEVALSKY.—In the NATURALIST for May mention was made of the arrival of this distinguished Asiatic traveler in the province of Tsaidam on the northern frontier of Thibet. Further information received at St. Petersburg states that he had previously visited the mountainous region south of Su-chow where two snowy ranges were discovered, to which the names of Hum-

boldt and Ritter were given. He reached Koorlyk, a distance of about 180 miles, without difficulty, but had much trouble in going on to Dzoon Zassak. The distance from Saisan to Dzoon Zassak, at the foot of the Burdan Booda range, is 1370 miles. The whole country traversed, with the exception of occasional oases, is a desert, and forests were found only on the Tien-Shan. Topographical, barometrical and meteorological observations have been made, and accurate data obtained for mapping a large extent of country. From Dzoon Zassak he started for Lhasa, and after being once misled succeeded in crossing the Blue river and reaching the Tan-la plateau where a great snowy chain of mountains attains a height of 16,800 feet.

After driving off a party of nomads who attacked them the expedition reached its furthest point at the village of Nabchu, 180 miles from the capital, permission to visit Lhasa being refused by the Thibetan authorities. The return journey to Tsaidam in the midst of the violent winter storms, was very trying, and took two months. Col. Prejevalsky visited Koko-Nor and finally arrived at Si-ning on March 19th. He hopes to explore the upper course of the Yellow river and return home by way of Urga.

MICROSCOPY.¹

USE OF COLLODION IN CUTTING THIN SECTIONS OF SOFT TISSUES.—The preparation to be cut being embedded as usual, collodion is applied to the surface of the object by means of a fine brush. The collodion is of the regular strength of the United States Pharmacopœia and should be allowed to settle so as to become as clear as water, and the clear portion decanted and reserved for use. Then after the first cut has been made with the microtome, and the superfluous alcohol removed by means of a piece of clean blotting paper free from ravelings, a small drop of collodion should be taken up with the brush and placed in the center of the object so as to allow it to flow out on all sides to prevent the formation of air bubbles. After being allowed to harden a minute, the section may be cut and placed on the slide with the film of collodion underneath. The advantage in the use of the collodion is that preparations which combine hard and soft tissues or those which are loosely connected, are held in place until the section is removed to the slide, stained and securely mounted.—*Norman N. Mason, Providence, R. I.*

THE ATWOOD CELL.—This new device, intended exclusively for mounting opaque objects, was designed by Mr. H. F. Atwood, of Rochester, and is made in hard rubber by Bausch and Lomb of that city. It consists of a black disc, hollowed at the top to contain the object, and furnished with a rim to receive the cover glass. Those now being made are adapted to half inch covers, and cost thirty cents a dozen. They can be obtained from the

¹This department is edited by Dr. R. H. Ward, Troy, N. Y.